

ABSTRACT OF THE INVENTION

Method and apparatus for separating components of a slurry comprising solid particles and liquid components, particularly where the slurry is under pressure. The components are separated in a hydrocyclone such that a solids-enriched slurry exits the separator via an underflow outlet while a solids-depleted slurry exits the separator through an overflow outlet and passes into a products vessel. Fluid communication is provided between the products vessel and the underflow outlet so that gas can circulate through the hydrocyclone. This gas circulation pathway may be achieved by enclosing the separation system in a housing or providing a gas circulation conduit between the products vessel and the underflow outlet of the separator or an optional solids vessel connected to the underflow outlet. Pressure within the separator apparatus may be adjusted and controlled at a negative, neutral or positive pressure while operating the hydrocyclone in balanced mode to achieve efficient separation. Where the slurry is derived from a high pressure and/or high temperature reactor and the solid components of the slurry include catalyst particles that are to be reclaimed and recycled to the reactor, the separator apparatus is preferably operated at substantially the same pressure that is found in the reactor.